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Louisiana in general, if those sources started using that fuel. So they ran to EPA and said, oh, my God, if you do this to us, we're not going to have any growth, we're not going to be able to do anything, no industry is going to be able to move in or operate, nothing, so cut us some slack, give the State some discretion, let us decide which of these tests we will apply, and that's why the regulations read the way they do.

And I should say that in doing that, EPA did not say that if you do the evaluation or if you determine increment based on actual, that you need to make -- put a 30-mile-an-hour speed limit on everybody or an individually enforceable permit limit on everybody. They realized, as everyone here has recognized, that it would be totally unreasonable to assume that all of the sources are going to be operating at some sort of maximum all the time. You don't know what that mix will be. So the way it dealt with that was the very regulation I quoted, which is the only thing on the books that says if you do a periodic review, and they require a periodic review, to determine that and you find that the increment is being exceeded, then you have to adopt a SIP call.

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I think the choice that the State has made here to base its periodic review on actuals is generally reasonable. I think it should recognize its history and the equities and good faith involved in the baseline sources consuming increment based on the allowable since that's been recognized so many times by EPA and the State. And there's another reason for that that was referred to by Mr. Southwick, and that's the fact that if those emissions -- if allowable emissions are to be used to determine the baseline, they will not consume increment, they will not restrict growth, and if your air is at a level that is satisfactory to the State, that choice is a perfectly reasonable one.

The other thing is I may have misspoke and said that EPA has never tried to do this before. They actually have proposed it in threatening letters of the kind the State got two times that I know of. One in Wyoming in the Powder River Basin to enforce the Class II increment, not the Class I increment. In that case they withdrew from the proceeding and an amendment was passed by Congress, the Simpson Amendment. I can get into that if anybody wants to talk about the Simpson Amendment.

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But the other instance was on the Houston Ship Channel for SO2. And just as in the first proceeding, they thought about it and said, oh, my God, this is just impossible, nobody can do this. They withdrew from that proceeding.

All of the proceedings, the 126 proceedings for acid rain in the East that have tried to do what you're doing here model all the sources and their impact by long-range transport. No regulation that I know has ever been opposed to any source based on that. It's just too hard to do and because there's factor of two accuracy in the models and some of the problems we're going to be describing, it just has been regarded as not a good enough basis for imposing expenses of a hundred to two hundred million on each plant, which is what you face here if you do what EPA says you should do and adopt a SIP call.

MR. WITHAM: I guess two additional areas of questions I have, but it's lunch. Do you want me to ask those now or --

MR. SCHWINDT: Why don't we stop and take a lunch break for now, come back about 1:15.

(Recess taken at 12:00 p.m. to 1:15 p.m.)

this is a breakthrough in improving meteorological forecasts. And so I think the agencies, EPA, IWAQM are in agreement that use of this type of four-dimensional data analysis with MM5, especially with the RUC model that has unprecedented ability to get winds that are normally not available to the public, would be the best way to go.

MR. WITHAM: I have no further questions.

MR. SCHWINDT: Any other questions? Having none, thank you. I think -- were you going to make some concluding remarks at this time?

MR. CONNERY: Well, we have one more witness, Curt Melland, who is going to be testifying about the Leland Olds plant and what is representative of normal operations. I understand that his testimony is about a half an hour, so I realize we've had more time than we asked for. And we can either start tomorrow morning, if you would like, or we can have him start now and continue tomorrow morning, as you please.

MR. SCHWINDT: I think we'd prefer to have it tomorrow morning rather than right now. Our reporter does need to go someplace else, so we'll have to --

MR. CONNERY: I understand.



MR. SCHWINDT: If there aren't any other questions, we'll adjourn for the day.

(Recessed at 4:53 p.m., the same day.)

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MR. SCHWINDT: Okay. When we broke for lunch, Mr. Witham had a couple more questions for Mr. Connery. Mr. Witham.

MR. WITHAM: Thank you. My name -- we've got a new court reporter so I'll just state my name again. Lyle Witham, Assistant Attorney General, and this is Robert Connery, and he's testifying on behalf of Basin Electric.

Mr. Connery, I want to begin by asking you the question I asked Mr. Long yesterday. What does the phrase "management of the increment" mean in terms of State discretion?

MR. CONNERY: Well, I think what that term means includes all of the decisions that go into managing the increment, making determinations of how much increment is used, whether the increment is exceeded, what data the emissions inventory goes into it, the meteorological data that goes into it, the assumptions, the discretion on whether you are conservative or liberal, whether you decide to overestimate consistently even when you know that the model overpredicts. It fundamentally involves the question of how you weigh economic development and environmental improvement. And those decisions are part and parcel of all of the determinations

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that you make, especially when you're operating with models that have an error factor of at least 2, even when they're good.

The decision on the kind of things that you assume is very much a matter of state discretion. The states have regulations. They adopt guideline models. If that helps with predictability, they have discretion to depart from those guideline models, when they hold hearings, have a notice on the model and make a decision based on it. So I see management of the increment as a broad task that necessarily involves monitoring data, which is the gold standard, involves in the case of Class I increments air quality related value assessments, because those are often very thorough. They often go into everything from biological resources to visitor experience to visibility, plume light, regional haze, biological resources, plants, wildlife. Those are relevant and certainly part of the decision that the State has made on many of the sources here.

Modeling has a role to play. It is the most imperfect of the tools that we have. I don't think sole reliance should be placed on it. I think it should be weighed against and with the other

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evidence. I think the decisions about those -- all of those kinds of data are part of management of the increment. The increment is set at areas which are labeled moderate growth -- pristine or wilderness for Class I, moderate growth for Class II, industrial development for Class III. Those are management goals. They're land-use goals. That's what the increment is about. So managing to those land-use goals and deciding what's important, what is significant, that is essentially a state and local decision.

And that is, I'm sure you know, having read all the preambles to this, that is a decision which Congress and EPA in formulating the program said was up to the states. Because what is significant depends on the people who are affected by it. If -- you know, you may have a recreational area or a wilderness area, national park, but it doesn't have to be a national park or wilderness area, where the people in the area affected, the state or the local government sees any deterioration as too much. Adversely affecting their economy. The State can decide that that is how they are going to manage land use in that area. You may have another area where you have 80 percent unemployment, and none of

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those resources are affected and you may make a different decision. You may use allowable in some cases and actual in some cases, a necessary part of the flexibility of the State in making what I regard is a very important land-use economic growth and environmental protection decision.

So that's a long-winded answer, which I apologize for, but I really do think it is fundamental to the economic and environmental destiny of the State to have control of those decisions, and the Congress intended that. And if you look at EPA's formulation of the program and what the people who adopted this said they intended it to do, that was it. They did not intend this to be a federal program. They did not intend the federal government to get involved and make land-use decisions for the State, much less dictate those to the State.

MR. WITHAM: In terms of the issues before the Department in this hearing, are you saying that the decisions as to management of the increment apply, for example, to -- that discretion applies to on a source-by-source basis whether we choose to use allowable or actual emissions and how we determine those actual emissions are to be applied or

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quantified?

MR. CONNERY: I think it does get down to a case-by-case decision, yes. And, as I say, because there are so many variables and so many things that are relevant to both economics and environment that the State shouldn't limit its flexibility to say I either have to do it all actual or I have to do it all allowable even though -- or I've got -- now I'm going to change from allowable, which I've been doing for 20 years, to actual and I can't backtrack or change that, ever. I think the State needs to preserve that flexibility, as well as preserve its good faith with the source that is permanent to levels that they reasonably expect to operate over the life of the facilities. Go ahead.

MR. WITHAM: My next question is kind of directed to a couple of the comments that Mr. Notar made yesterday. There are different visibility programs under federal law, but in terms of visibility as it applies to PSD in air quality related values, does the concept of baseline and setting a baseline level for visibility in terms of the air quality at the time of the baseline date, does that concept apply to visibility as well as the other air quality related values that are

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considered?

MR. CONNERY: So far the term of -- there are three aspects to the baseline; the baseline date, the baseline area, the baseline concentration. They so far have been all physical measurements. The baseline has been the actual ambient air quality in the area measured for the pollutants that would be emitted significantly by the source. So they have not done baseline visibility monitoring of those sources. Visibility is an air quality related value and where you have to get a determination from the Federal Land Manager, then that assessment has to be done by the Federal Land Manager on visibility before the source can be permitted and that, of course, has been the case here since 1982 for many, many, many sources.

I was -- the testimony that was given here earlier by Terrence -- I can't remember his last name -- but he talked about visibility from his window, and visibility, this scheme we're dealing with, prevention of significant deterioration, apart from the provisions that deal with air quality related values, if you're dealing with Class II areas, this scheme doesn't deal generally with those sources. As I said to begin with, this was devised

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as a new source permitting scheme, new and major modified sources. That's the PSD program. It's in Sections 160 to 169 of the statute.

There's a Section 169A that deals with visibility. And that section does apply retroactively when EPA acts by rule. It applies what is called best available retrofit technology, a separate standard appropriate for existing sources and their economics and their history. When Congress intended to control sources for that purpose, it did so very clearly. It didn't do so so clearly with PSD. Matter of fact, it didn't say anything about that.

So I think that visibility is the subject of a separate program, as well as an aspect of air quality related values assessment when it affects Class I areas. It's important to take it into account, and it's being phased in over time under new regulations. And that, unfortunately, the concern of the commoner, the visibility, really goes to another program. This program wasn't designed to deal with existing sources, and I don't think it is -- it has that purpose in general, certainly in Class II areas, much less that it's part of what goes into the baseline generally.

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MR. WITHAM: My final question deals with the problem of -- and it's, again, an issue that's raised in the '80 preamble to the '80 rules which are the basis of -- which are basically the rules still in existence today for EPA and also on the basis of almost word-for-word North Dakota's PSD rules.

In there the preamble talks about if you measure emissions at allowable -- I mean, actual, rather than allowable, there's a potential of double counting because then you're determining compliance based upon the current rate, and it suggests that the regulator or the State, which would be the State in this instance, should dock the policies if they use that methodology to make sure that the -- in order to permit a new source, for example, that that -- that those sources not then be allowed to go back up to their allowable so you get a double counting of that reduction.

Would you comment on that problem and the policy choices that the Department should consider in addressing that particular problem?

MR. CONNERY: Yes. That, again, is the most difficult of the problems, I think, presented by this scheme that hasn't been worked out at all by

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anybody else anywhere. You're right, if the State relies on current emissions and they are not enforceable, if the State can go beyond that capacity, then there is a danger that the increment will be exceeded.

Now, in the case of a Class II increment where it's an absolute requirement, I think that's a problem and a very significant problem. And the enforceable limits, it would have much more justification. You'd still have the problem of whether or not all the sources were operating up to whatever level it was in general. Therefore, I have thought that a suggestion which has been made by others of having as a screening tool for periodic SIP review, periodic review of whether the increment is exceeded, it makes sense to look and see whether all the sources are operating together in some joint way that does require enforceable requirements to protect the increment, whether you need to do the SIP call, in fact. And that that would be a good tool and the most reasonable tool for doing that.

I should also say that EPA in discussing the problem of double counting, as well as minor and area sources that weren't subject to any permit limits and growth in general that may result in

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exceeding the increment, did not say that you had to put enforceable limits on all of those sources. It basically said you had to keep track of them through periodic SIP review. So to the extent that it's been suggested that you do have to put limits at the level of the current emissions that you model, I don't think that's required legally. I think periodic SIP review as well is designed to do that and to adopt a reasonable tool, that that would be adequate to do the task.

It would be nice if you had some company somewhere and somebody else who thought about it, but the states are the great laboratory for this kind of work and this kind of land use and this kind of growth management. And I think there's some virtue to it being worked out on a different basis, state by state, and this is the first state that's done it and had to come up with a comprehensive proposal that makes some sense.

MR. WITHAM: Well, here's the hard policy issue the State has, if we choose to do what we are proposing in our draft, that that modeling that we've just completed shows that the increments are not being exceeded at the 2000-2001 emission levels, did not model '98 or '99 emissions, but it is likely

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if we would model those emissions, that using our methodology there would be exceedences. So how do we address that problem? That's my last question. I'm not going to ask any more.

MR. CONNERY: Lyle, your questions are so easy. You ask the hardest questions. How you keep track of the -- of what's happening in the State and control it, I don't pretend to have all the answers to. I've lost my train of thought. Can you repeat what you're --

MR. WITHAM: Basically, the problem is if we would use -- the rule says you should use the last two years' emissions.

MR. CONNERY: Okay. Okay. Got it. I remember. I was going to say that, you know, part of the problem and part of the -- what is sensible about the State's approach to this is that you are using criteria and data for making decisions that aren't just instant day kind of short-term decisions because you're making long-term control decisions that will cost hundreds of millions of dollars, and to base them on a rare occurrence or one day when you're looking at a long-term control philosophy or program doesn't make much sense, the coincidence of a year or two.

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So I think the fact that you look at another year, you would get an exceedence using your model even with your assumptions and even being reasonable about the assumptions, doesn't mean that you have to make a decision to revise the SIP and to control those sources, even if you got an exceedence. In my view you have -- you've made showings up to 12.7 micrograms of no air quality related effects, value effects on Class I areas. All the levels that you're talking about are below those. They would fit, I think, rather easily since all your predictions now are so far below that and the air has improved so much, that you could easily determine based on the monitoring data and the air quality related values determination that have been made to date, that the models simply are not reliable enough and don't tell us enough. They only tell us within a factor of 2. They could be off by 100 percent overprediction. That you simply don't give that the weight, if it does give you a violation, that you give to the other data you have on what really is happening in the Class I areas.

So we're going to present some further testimony on modeling. We know that both EPA and the State were limited in what they could do, but as

testified, it takes a lot of money and resources to do that, so in this case we don't think that will be part of that, but that's going to be part of our testimony.

MR. WITHAM: I have nothing further.

MR. BAHR: I have just a quick followup. You talked about the management of the increment and that there was discretion in the State. You would agree that that was not under federal discretion , correct?

MR. CONNERY: I completely agree.

MR. BAHR: And that would be limited, of course, by law, by regulations that would be binding. What other than that, just arbitrary and capricious, or --

MR. CONNERY: Yes. I think the test here is arbitrary and capricious. I think the -- they're administrative decisions. Arbitrary and capricious, clearly erroneous, as a matter of law, supported by substantial -- if it's adjudicatory, substantial evidence in the record, but definitely subject to law and subject to control and requiring reasonableness, and if -- the State is indeed accountable for those.

MR. BAHR: Based upon the Alabama Power



decision, would it be your position that guidelines and such things like that by EPA have no binding effect on the State?

MR. CONNERY: Yes, indeed. There is a more recent decision in the last year, I believe, called the Appalachian Power Case, where EPA issued guidance on continuous emission monitoring that, in effect, had a great effect on the way the standard would be enforced, the way you collected data. And it was in guidance, and the court threw it out and said, what you tried to do by way of the guidance has substantive effect, real effect on the people regulated. It is final action and you didn't go through the rulemaking process and you have to do that before you can impose it on sources, which is very much the case here.

What you have in front of you is a letter from EPA Region VII and testimony. You don't have any guidance, any rules. You don't have any court decisions. You don't have any precedent from anyplace else as far as how to do this.

MR. SCHWINDT: Are there any other questions?

MR. O'CLAIR: Mr. Connery, Terry O'Clair, State Health Department. My question relates to the



slide on the alternate increment that you had here. You indicated that the alternate increment was 91 micrograms per cubic meter.

MR. CONNERY: Yes.

Mr. O'CLAIR: My question pertains to, are you -- just to clarify, does that pertain to -- in your opinion, does that pertain to the sources that were granted a waiver, or does that pertain to all sources?

MR. CONNERY: It clearly pertains to the sources that were granted the variance. It is another one of those gray areas as to the effect that it has beyond that. I believe that the determine -- I believe that the total impact is what counts, and that when you make an air quality related values determination that, for instance, is 12.7 micrograms, that because it takes into account all of the sources that existed at that time that were affecting the Class I area and determines that all of those emissions did not adversely affect the Class I area, that it covers those sources and to the extent that they were done 20 years ago, that it, in effect, ratifies that each time it is done.

So while I'm sure you could find people who disagree with me about that and would like to parse



it a little bit more closely than I just have, I'm sure there are people who disagree because it's unclear, but it clearly applies to the variant sources themselves.

MR. O'CLAIR: As a followup then, you just mentioned the limit -- or not the limit, the value of 12.7. Could that be considered an alternate increment as well rather than the 91 in your statement?

MR. CONNERY: No, I don't think -- I mean, I think the alternate increment is 91 in our 24-hour example. And that, in effect, air quality related values can be determined not to be adversely affected up to that level and even beyond that level, but that 91 will be limiting. That, in effect, is one-fourth, 25 percent of the ambient standard at which there are health and welfare effects. So Congress has basically said, you guys out here only get 91 and even though, if you were back East and you were not an attainment area, they could get 365 for economy growth and they're using every bit of it. They basically said, no, you're going to have air that is three times, four times as clean as the rest of the country, because we don't want our industry moving out to you guys.

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MR. O'CLAIR: Thank you.
MR. SCHWINDT: Are there any other questions? Okay. Thank you. You'll introduce the next witness?
MR. CONNERY: I would love to introduce somebody else. Basin Electric has four witnesses that are going to be presenting testimony to you. The first is going to deal with the subject of monitoring data and modeling and how to weigh the two and how they have been weighed, many of the questions that have been asked here.
The second witness is going to deal with the emission inventories that went into the modeling and what the State put into the model and what EPA put into the model and which is the more reasonable of those two.
The third witness is going to talk about the model Calpuff and its history and its use and its use in this case and what the best way to do that would be. And he has indeed run this model with some things that I think you'll be very interested in, that I was when I saw them.
But the first presenter is going to be Kirk Winges. Kirk has been working as an air quality analyst and practitioner, working for EPA, working

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for the State. He's worked for the Air Force. He's worked for private industry. He has done altogether 200 air quality studies, including both monitoring and modeling, a hundred of them air quality, air modeling studies. He has written models.
He has -- his undergraduate degree is in geophysics from Massachusetts Institute of Technology and his master of engineering is from the University of California at Berkeley. I'm not going to go through all his papers and all of his qualifications. I've worked with him for most of those 32 years that he's been doing this. And I'd like him to talk about modeling and monitoring and how he sees those being weighed in the State's decision in a way that I hope will be useful to your decision.
MR. WINGES: I have to raise this microphone up just a little bit higher. Thank you for allowing me to come and speak to you today. Basin Electric has asked me to comment on the possible degradation of air quality in the Class I areas in North Dakota, and, specifically, I've been asked to evaluate the methods and conclusions drawn by EPA in determining SO2 increment violations and whether or not they occurred in North Dakota. So

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the issue really here is PSD.
And I've got a couple of things that I want to keep in focus as I talk with you today. PSD was created after the Clean Air Act in 1970. The Clean Air Act of 1970 established the national ambient air quality standards, and it was promptly challenged as soon as it came into law. The fear was, the concern that people had at that time, was that the national ambient air quality standards would encourage industry to move from the dirty parts of the country to the clean parts of the country. By having a maximum allowable level, they essentially created a ceiling and if you happened to be located in an area where the existing concentrations were bumping up against that ceiling, well, you didn't want to build your new facility there, you wanted to move it out to Bryce Canyon National Park or someplace where the air was really clear and really clean.
And so I think one of the attorneys used the expression with me last night, graying of America, and I think that was the expression that was used at the time. It was going to take all of the dirty industry and move it out. It was a good point.
And so PSD, or prevention of significant

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deterioration, was created at that time specifically to deal with that issue. The terms "prevention of significant deterioration" are pretty obvious and people look at them and think everybody understands it. But they're very subtle. If you look at the terms, there's two terms in there; there's the term "air quality" and then there's the term "significant deterioration," and it's the definition and how one determines what those two terms mean that is sort of the key part of the hearing that we're having today and the analyses that have been done.
But the focus here is on short-term sulfur dioxide. That's really all we're talking about. I'm going to try and not talk about visibility. I'm going to try and not talk about particulate matter. I'm going to try and not talk about regional haze. I'm going to try and keep the talk specific to short-term SO2 concentrations. And so we need to think about what is air quality and what is significant deterioration in terms of short-term SO2 concentrations.
Now, any time you're dealing with a short term, and in this case any time you're dealing with air quality of any kind and sulfur dioxide concentrations, you have to average those. Every

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breath we take of air has a slightly different concentration of SO2 or any other pollutant. In order to deal with those in a regulatory manner, we have to average those concentrations over time.

So you can take averages over long periods of time like a year, five years or 10 years, but -- and there are certain health effects associated with that and laws that have been established to deal with those issues, but there are also effects, health effects, associated with short-term exposure to SO2, and so they've established two averaging times that we use to regulate -- for better or for worse we're stuck with these -- the 3-hour and the 24-hour time. These are averaging times that are used and it's why you see these repeated over and over.

The regulatory community has established those two averaging times as appropriate for dealing with sulfur dioxide short-term impact. And if you think about time and you think about concentrations, we can take the world, we can take the time that goes before us and say, let's divide it up into a series of 24-hour episodes, chunks, if you will, of time, and every one of those will have a different 24-hour concentration.

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And in regulating the short-term concentrations, EPA wanted to get not the average of all those, but at the worst-case ones, the highest ones, the peak values. So if you took all the 24-hour averages in a year and sort of laid them out on a table, wrote them down on a piece of paper and laid them out on the table, you could sort of -- and rearrange them so you found which one was the highest, which one was the second highest, which was the third highest. And if you did that, you'd have a cascading sequence of concentrations, 24-hour or 3-hour, and what they really were concerned about in regulating these and establishing these regulations was the upper end of this.

Now, in regulating, the powers that be, the regulatory community, the Congress, and all the people that looked at this, they could have chosen the highest value. They could have chosen the second highest, the third highest. They could have chosen the ninth highest. They could have done something more sophisticated and tried to take some statistical average at the top or put some curved data to this, but they didn't. They chose to keep it simple and they chose the second highest value. And, once again, for better or worse, we're stuck

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with that.

So regulations are established on the basis of the second highest SO2 concentration for 3-hour, the second highest SO2 concentration for 24-hour. Understand that that second highest value is a representative. It's a representative that means something very important. I'm back to my first point. It means air quality. We're going to define air quality for short-term SO2 concentration. We're talking about the second highest concentration of sulfur dioxide, the second highest 24-hour and the second highest 3-hour. That number, that value is representative of your short-term SO2 air quality. It's like your elected representative you send off to the State. He's your guy that represents your air quality. If it's a high number, you've got bad air quality. If it's a low number, you've got good air quality. It's really that simple.

Now, if you want to go out there in the air today, right now we could establish what that current air quality was. We can establish that by finding out what the second highest SO2 concentration is for 24 hours. That's the regulatory way of determining the existing air quality. But, again, I said that the PSD laws were

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established to try and see if the air quality had been degraded, if that second highest value is significantly different now from when the law was passed. So establish again we get into the concept of how you determine a baseline date. But the baseline air quality is done the same way; a series of 24-hour episodes, which is the highest, the second highest, the third highest, the fourth highest and, once again, the focus of the regulation is on the second highest.

So the focus Of PSD was, has there been a degradation to air quality? Has air quality here gotten worse from what it is now to what it's going -- to what it was on the baseline date? Has that gotten worse? And you do that by comparing -- oops, the subtract sign was supposed to be up there -- by subtracting the highest from the second highest and, voila, the concept of increment was born. Increment is literally the difference in those second highest concentrations. It might surprise you, and all of you probably think you understand this and this is pretty obvious, but it might surprise many of you to find out this isn't the way EPA does this. And I'm going to show how EPA does this and I'll get to that a little later on

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in the talk.

But right now I'm going to go back to my task, my charge when I took this project. And that was to find whether there's been significant deterioration in the Class I areas in North Dakota. And to do that I had to come up with these guys. I had to say, well, how would I go about determining what the second highest concentration was, what it is now and what it was on the baseline date? How does one go about this? Well, the first thing you could do is look at measured data, and we're fortunate in the State of North Dakota here because we have 20 years of high-quality air quality data that have been measured in the State of North Dakota. You have two air quality monitoring sites; one at the North -- the South Unit and one at the North Unit, and you have almost 20 years of history, over 20 years of history in some cases, of measured air quality at these two sites.

Now, I have a lot of confidence in these air quality data. I think these are pretty good information. And it's not idle confidence. It's based on some pretty good information. This is a picture of one of the stations. This is the South Unit, the Painted Canyon site. This is -- you know,

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there's a couple things to just look at this station. I took this picture myself when we were out there a week or so ago looking at the station. This is a pretty good, well-maintained station. I mean, bars aren't rusty. Things have obviously been well-maintained and taken care of. I think it's a -- I think it's a good station and good site for a station.

So I have a lot of confidence in the data, and my confidence isn't idle. It's based on some facts that I think we know. First off, I know the instruments that are put in there. These are Teco Model 43 and 43Cs. These are state-of-the-art sulfur dioxide measuring instruments. There are no better instruments available to measure SO2. There were some older data collected with, I think we used the term bubblers, some people called them impingers, from back in the '70s, and those are probably lesser quality. I think the detection limit isn't as good on those as there is some refrigeration issues with the character samples, but the model 43C is a very good instrument. Very good instrument. It's the Cadillac for measuring SO2 concentrations.

These are good sites. I personally visited

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both of the existing sites with the existing monitors. We also saw the previous sites where these monitors were located before they were moved to the current sites. We looked at all of these. The exposure is good. There are no obstructions that are in the way of any of these. There's no major sources. There's some roadways around some of them, but there are no major sources that would cause me to think that those sites are suspect. So I think the sites are good.

We have an agency with skilled people operating it, and I'm not here just trying to ingratiate myself with the State of North Dakota by saying this. Generally, my experience has been that air quality data collected by agency people is superior. As a result of my job I have to look at air quality data all the time from all over the country. Some of the data I see is collected by industry people. Some of the data is collected by agency people. Some of the data is collected by private groups, private interest groups, and by others. And I always feel I have a high degree of confidence with agency data for a couple reasons. One is, that when you look at an industry and count the type of people they have collecting their data,

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oftentimes those people are often tasked with collecting water quality data, maybe checking soil samples, and maybe even have to run a drill rig. You know, these people are stretched thin. They can't always devote the time and the effort. Their priorities aren't always set. And these air monitors, you know, you put them out there and let them go and they pretty much run themselves. So there's a tendency to kind of let them go. Whereas with the State agency, you've got dedicated people, you've got a group who is specifically assigned responsibility of running the stations and they are dedicated people to run it and they generally do a really good job.

Also EPA has accepted these data and put them in their AIRS database. The AIRS database is the main air quality data set in the United States. And EPA's acceptance and inclusion of these data in the AERMOD is an indication that they are high quality. They have quality assurance and quality control programs in place with these stations, which I, again, feel confident that these data are high quality because they have independent quality assurance audits and the steps that the states go through in making sure that their data are

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appropriate.

And, finally, last, but not least, these have a long record of history. And that's important because if something is going to go wrong with a station, generally it's going to go wrong in the first couple years that you put it out. These guys have probably learned everything that you can possibly have go wrong trying to run air quality monitors in an environment like rural North Dakota. I suspect that this long record of history, these need to feel that these data are good, that these people know what they are doing, and that I can rely on the data.

So what did the data show? You've already seen these data from other presenters so I won't spend a lot of time on this slide, but the data in the dark, I think, circles are data from the North Unit. These are 24-hour second highest SO2 concentrations, and the green triangles are from the South Unit. What these data show is basically you've had improvement of air quality in the North Unit and pretty much steady levels in the South Unit. So we had the computer draw some trend lines on these using a trend function, and it shows essentially what I just said, that the trend in air

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quality in the North Unit is decreasing or improving air quality, and the trend in the South Unit is essentially holding steady.

A similar pattern is shown with the 3-hour SO2 concentrations and, again, there were high concentrations earlier at the North Unit. The decreased concentrations at the South Unit have stayed pretty much constant, and the trend lines that we drew from those show the same pattern. So we draw a conclusion from that that the air quality data by themselves imply that air quality is pretty good in Class I areas in North Dakota. It hasn't really changed a lot. There's certainly no evidence of any deterioration, significant or otherwise. If anything, it may have gotten better, but it certainly hasn't got a whole lot worse. It's probably, at worst, held steady.

Now, the second thing I looked at in trying to determine whether there was potential degradation of air quality in these Class I areas was to look at emission sources. Now, when I look at emission sources, the first thing I'm going to look at are the sources that are closest to the national parks. Those sources have the greatest potential to emit. As previous speakers -- or to impact, I should say.

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As previous speakers have indicated, it's the further you get away between a source and a receptor, the greater the concentrations falloff, the more decrease you have, the more dispersion you have. And so sources that are 150 kilometers from a receptor, although they may have a lot of emissions, don't have the potential to impact as much as a source that's very close.

And I know that the oil and gas sources were the closest sources that have been operating in those 20 years in and around those Class I areas, and we have seen a steady decrease in the emissions from the oil and gas sources. This is, of course, because the oil and gas producers in the '70s and '80s had no place else to put their gas so they were just flaring it and had associated sulfur dioxide emissions from flaring the gas. As the gas processing plants were constructed, they were able to tie it up and send flare gas to gas processing plants, so we had a reduction in emission. This, too, adds evidence to me to suspect that concentrations in and around the park may have been on the decline.

Those oil and gas sources are very important because those oil and gas sources are

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extremely close to the national park. This is a plot that shows where the national parks are. You can see them in green here. The black dots are the oil and gas sources. The major sources, the power plants, are these green circles, and they're quite some distance from the Class I areas compared to some of these blacks dots, which are immediately adjacent to the national park.

So in general -- oh, I have another slide here that -- the Federal Land Managers in 1993 made a decision that in -- and I know that Mr. Connery spent a fair amount of time talking about this already, about the no adverse impact decisions, but I just wanted to take a little sound bite out of there, and that sound bite says, that, in general, the air quality in North Dakota appears to have improved for various reasons since the FLM's last certification of no adverse impact in 1984. So at least from the early '80s through 1993, the Federal Land Manager had concluded that air quality was an improving trend in the Class I areas.

And what's happened since 1993? This is a little table of emission rates. I don't know if all of you can see this in the back. This column here is probably the most critical one. And we see the

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concentrations in the last -- since 1993 through the year 2000, the emissions kind of went up a little bit and then decreased. So now at present emissions in 2000 of all sources combined of sulfur dioxide are less than they were in 1993. I add all of this sort of information up before I enter the realm of talking about models or what models might say or what models might predict and I try to assimilate the information that I've gleaned from looking at the air quality data, the close emissions sources, the Federal Land Manager decision, and I come to some conclusions.

One, is that air quality has improved or at worst stayed the same in these Class I areas. That's what I would expect. Critical sources of emissions close to the Class I areas have decreased. And that leads me to the conclusion that increments shouldn't be exceeded. That would be the conclusion I would draw without ever doing a model, without ever looking at a model, if all I had to base my information on was this, I would probably come to that conclusion or at least that would be my expectation.

But we're here today because the model, some modeling done by both EPA and NDDH, in their

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first study, predicted values above the Class I increments for the 24-hour and the 3-hour SO2 concentrations.

Now, I want to talk just quickly about the models, just some general introduction to models. I think everybody in this room has heard a lot about models. A model is a mathematical representation of atmospheric behavior. It's designed to take information about emission sources, about meteorological data, about terrain, topography, and anything else it can get, and it puts all of that information into a big computer program and from that computer program calculates concentrations, calculates the air quality, if you will. And so a computer model is really trying to get at the same thing as the measured data that I talked about before.

And so some people think that the computer model and the measured data are at odds with each other and that they're both trying to do the same thing. And they are to a certain degree, but there are differences and there are strengths of models and weaknesses of models and strengths of measurement data and weaknesses of measurement data, and the ideal program uses both of those types of

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information together to make decisions so that all of that fits together. And the critical part of this is that these two should agree. The model should have some sort of basic agreement with the measurement data, and the measurement data should have some sort of agreement with the model.

Doing a little comparison of the two there's certain advantages to the models. The models have a great deal of spatial flexibility. You can put receptors anywhere you want and calculate concentrations at any location you want. Whereas with the monitors, you're pretty much stuck with whatever the data is at the point you have it. A model can analyze an awful lot of meteorological data, whereas with measured data you pretty much are stuck with whatever happened. With a model you can look at every possible meteorological condition that could ever occur. With measurements, of course, you're stuck with whatever meteorology happened at the time. The models, of course, can look at future cases and what-ifs. We are going to build a new source, can look at what the impact of that new source might be. Going to make a modification to an existing source, what's that going to do, how is that going to change it.

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On the other side of the coin, the measurements have certain advantages over models. Measurements are accurate. Models are not as accurate. Measurements are the gold standard. How do you evaluate a model when you want to evaluate how your model is doing? You compare it to measured data. I'm not saying measured data is perfect. There is a certain error bar associated with measured data, but they are the gold standard by which models are evaluated, by which everybody judges air quality, based on the measurement data. The models are an approximation at best.

The measurements have extremely good temporal resolution; that is, want to know what a concentration was at 3 o'clock in the morning on January the 5th, well, measured data will tell you. Models, we're going to see here in a minute maybe models aren't so good at predicting in time when a particular concentration is going to occur at a specific location. Kind of a little preview of what I'm going to come up with in a minute.

The last thing I'll say is that models tend to be a black box. Even experienced programmers like myself, I'm sure Mr. Notar I see hiding in the back there, and Mr. Golden, who have spent a lot of

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time looking at code and understanding how -- and Mr. Paine -- looking at code and looking at FORTRAN programs have a lot of experience with these things. But even us, a model like Calpuff has literally thousands and thousands of lines of code, many, many hundreds of subroutines. It's an extremely complicated animal. It gives you a number you're not entirely sure of how it got that number or where it got it. You think you know, but you don't always know exactly what it's doing. Whereas with the measured data, you pretty much know how it got the numbers it got.

It's my opinion, based on looking at the model that EPA has performed, that there are a number of problems associated with the EPA study. I think there are deficiencies. I think the way EPA calculates increment is incorrect, and I'm going to talk about that. There are other problems with the EPA studies that speakers after me are going to address, but I'm going to kind of keep my comments here focused in one area.

Specifically going to talk about how EPA calculates increment. Remember the slide I presented back at the beginning of my talk, as I said at the beginning of my talk, EPA doesn't do

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this. EPA uses a different technique. And I want to use an example to show you how EPA would have you calculate increment and how it deviates from what my opirion is -- let me back up here -- that what is intended by the Clean Air Act that the PSD amendments were intended to get was an assessment of air quality and the difference in air quality and was air quality degraded as a result of changes that have happened from the baseline date to the present. That's what I think PSD is all about and that's what this calculation was intended to get at.

I'm going to illustrate this with an example, and these are going to be model predictions now. We've gone away from measurements. I'm going to tell you about model predictions now, just pure model predictions. And let's suppose that I ran a model and I ran it and I calculated 24-hour averages at a single receptor. And for the existing conditions, for present, for current, let's say that my concentrations came out like this. I'm only showing seven days here because if I put all 365 up here, you guys wouldn't be able to see it and it would take me forever to get through it. But I'll just put these seven days up as a nice, little, neat example, but try in your mind to imagine that this

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actually is done with 365 days. And if you are running five years, you've got more than that, and if you're running three hours, you've got over a couple thousand for your 3-hour concentrations.

But, anyway, you look at these data and the first impression, you look at them and you see that air quality is pretty good. Existing air quality that is happening right now at this site is pretty good. We have all numbers that are single digits. There is no concentrations, like I say, above 10. I've got a zero in there, you know, the air quality is pretty good at present. Now, you run -- and, by the way, I will say if any of you have ever looked at model output outpour for day by day, this is kind of what it looks like. It doesn't follow some nice, smooth curve. It kind of tends to jump around a little bit all over the place. It will say five one day and the next day it will say zero and the next day it will say 50. They bump around all over the place. They're not smooth functions.

Okay. Now, let's take a look at the baseline concentrations that we might model for this same case. And look at that and your first eyeball, without really even looking at the numbers, without really even calculating or doing anything in your

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head, you look at that and say, gee, the baseline in the air was a lot worse back in the baseline. It's got 30 in there. It's got 25, a bunch of double digit numbers. Just without ever doing any analysis you can kind of get the gut level of saying that, gee, the air quality was worse in the baseline period than it is now.

And I've done a couple of quick, little statistics on that data set. Just some real simple stuff. The average in that baseline set was 14.6, and the average for current conditions was 5.1. A substantial decrease in concentrations. The highest value in that baseline set was 30. The highest value in the current corditions is 9. The highest second highest value in the baseline is 25. The second highest for current is only 8. So in my increment calculation where I take the current and subtract the baseline, I get a negative 17. We call that increment expanding. It means that the concentrations are now lower than they used to be. You've got increment expansion in this example.

And yet EPA wouldn't concur with this. If EPA was to take this same data, same emissions, same monitor results, this is how they would calculate the increment. They would take January 1st and

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subtract it from the model prediction, subtract the two predictions for baseline and current and they'd get negative 25. Similarly, they'd do the concentrations from January the 2nd and January the 3rd and January the 4th, they would make that subtraction day by day. Then they would have to sort these subtractions and they would rank order them from top to bottom and say, what's my second highest? My second highest here is 6. They would conclude it's over 5 so, therefore, this day has significant air quality degradation compared to this day. The air in the current case is significantly degraded over the air in the baseline case. Violates the increments, we have significant air quality degradation in this case.

I think that conclusion is illogical. I think that conclusion defies what I think the intent of the law was, which was to establish not what happened on January the 2nd, not what happened on January the 5th, but what's my second high? Has my second high changed or has my second high not changed?

There's another element to this. Whether you agree with me on this or not, by the way, there's another element to this that I really want

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to point out and I want to get through. This is a little bit more subtle, and I hope I can make this point. That in making this subtraction on January the 1st of baseline and current, which EPA does, they imply something very important. They imply that they know what the concentration is on January the 1st in the current and in the baseline. They imply that they have knowledge of, they're able to predict specifically in time what the concentration is at a specific time, at a specific location. Then you ask the question, well, do they really have that skill? Do the models they're using really have the ability to do that?

I did a little, quicky model performance how the EPA model does, and this was done by very simply and quickly, in about a half-hour, where I took the EPA's model predictions for the year 1990. They ran -- the five years of meteorological data the EPA run in their data set was from 1990 through 1994. And I happened to have 1990 meteorological data. I happened to have air quality data at the South Unit for the first six months of the South Unit, and I said, well, how did they do in the first six months? How did they do on picking January 1st, January 2nd, January 3rd? How did they do in

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predicting the concentrations at that time?

So I took the receptor and the data set that was closest to the monitor location, and I'll be honest and say that this is for 1990, and the EPA's emissions inventory was for current conditions or 1999, so there's going to be a little bit of difference between what the emissions were in 1990 and what they are in 1999. But it shouldn't be a huge difference. Probably be a little bit of scatters associated with it, but the model still ought to do more or less well because it's fairly close.

And the way we do this is, is we make a little plot like this where we put the measured data down here on the X axis and we put the model data up here on the Y axis, and if the world was a perfect place and the model is working perfectly, all the data should line up right along this diagonal. When they predict 30 -- when they predict 30, the measured data ought to be 30. When the measured data is 20, the model ought to predict 20, if the world is perfect. Of course, it's not perfect, and you always, in any model evaluation, you are going to see some scatter, some scatter about this line here. And the degree of scatter that you have is an

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indication of how good or bad your model performance is. If you have a lot of scatter, then, you know, then it indicates the model is not doing so well. If you just have a little bit of scatter about this line, then the model is probably okay. Probably doing reasonably well.

So here's how it did for my first six months of 1990. This is horrible. This is very, very poor model performance. When you measured 47 out there, the model said zero. When you measured 32 out there, the model said zero. In fact, all of the high-measured data, the model missed it. The model said it was zero at those times. Conversely, all of these high values that the model said it was high, the measured data was zero for those times. In general, the model performed very, very poorly. We call this a paired-in-time comparison and every modeler worth his salt that's in this room, and there are several, will tell you that no model can do well paired in time. They always have to do something they call unpairing the data. That's where they take the highest model prediction and compare it with the highest measured prediction, regardless of when they happened in time. That's the only way any of these models will ever show

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decent performance. By having data paired in time, I don't care whether it's Calpuff, whether it's ISC, whether it's AERMOD, any of the models out there, none of them can do it. There's just too many variables; the distances that we're traveling, the variability in the atmosphere, they're all too great to be able to make that kind of performance.

If we turn around and pair this data in time -- I'm sorry -- unpair the data in time, voila, same data, same analysis, all I've done now is unpair the data in time. Here the model performance isn't so bad. There's some scatter there, but more or less it's kind of a lot closer. But here's the crux of the matter. In order to get to this point EPA or any model evaluation had to unpair the data in time. They had to say, I don't know what the concentration is on January the 5th. All I know is that I can predict a statistical distribution of concentrations out there and it will be more or less close to the statistical distribution of measured concentration. This is how model evaluations are always done.

They're saying, in effect, that the model has no skill, no ability to predict when paired in time. No ability to pick a concentration at a

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specific time and location. But as I showed you the way EPA calculates the increment, by definition they're demanding that their model be able to do just that, which it can't do. They are saying, we know what the concentration is on January 5th because we are going to subtract the baseline concentration, which we also modeled and we also don't know, on January 5th, and we're going to subtract those two and see what the increment is. The EPA's calculation of increment is illogical, but also they do not have a model with the ability to make that prediction in the first place.

So my conclusions from the model evaluations are Calpuff doesn't have the skill to make -- to predict concentrations when paired in time. Calpuff's only demonstrated skill is in predicting a statistical distribution of concentrations. Can maybe tell you with some reasonable level of accuracy what the highest and second highest numbers, the range of values that you might expect for those, and as a result of that, it can't be used in a paired-increment calculation, which is exactly what EPA used it for.

So we have an apparent disparity. We have the air quality data that I reviewed and emissions

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information that would imply to me that air quality has improved or remained unchanged. On the other side, we have EPA's modeling analysis that implies that PSD increments have been exceeded in the Class I areas, implying that there's been significant deterioration of air quality. When these two things don't agree, first thing you want to do is try to find some way to make them agree or get them to resolve, and I think the State of North Dakota in their MAAL approach, which is very similar to the type of calculation that I've done, where I unpaired the data in time to make the calculation of increment, highest against highest second highest against second highest, that they -- that's a step in the right direction. There are others, the speakers who are coming after me are going to talk to you about, of the ways to improve this modeling so that we might get a little closer so this disparity doesn't exist.

But if we can't resolve this disparity, one of the questions you, the hearing examiners, have to answer is, can we toss this out and make our decision on increment, solely on the basis of this? Do we have a basis to do that? I'm not a lawyer. I'm not going to give you a legal argument, but I

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can tell you a couple of things from the guideline on air quality models, which is in the Code of Federal Regulations. It is a law. These are quotes from what's known as the guideline of air quality model, 40 CFR Part 51, Appendix W. One approach is that there are circumstances where there is no applicable model and measured data may need to be used. So there is law that allows you to contemplate using measured data instead of the models. It also talks about how measured data can be used in a complementary manner, and what it's essentially saying is that measured data can be used and should be made to agree with model predictions, but also says that measurements are particularly useful in assessing the accuracy of models. Something that we have said.

This implies -- the point of these two quotes, this implies that there is a role for measurements in the PSD process and, finally, perhaps most important is this quote. The use of air quality measurements alone, however, could be preferable when models are found to be unacceptable, which is I think what we have here, and monitoring data with sufficient spatial and temporal coverage are available. Now, the question of whether we have

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monitoring data of sufficient temporal and spatial coverage is an interesting one and a difficult one.

But first off, I would say that we have 20 years, more than 20 years of record of the measurement data in this area. It shows clear trends that I think are apparent from the data, and I think you have sufficient temporal data to make a conclusion. Spatially, you have only one monitor in each of these parks and one might argue that you would need additional monitors to have additional spatial coverage in the parks, but I don't think so. I think that the sources that you're contemplating here, that are under consideration here, are 150 kilometers away from the Class I areas. The Class I areas are small compared with the distances between the -- between the Class I area and the sources of emission, and I wouldn't expect there to be huge gradients of impact from those large, major sources across the Class I areas. There may be gradients in the Class I areas, but they are likely caused by sources that are much closer to the Class I areas than the ones we're talking about.

I believe that -- the conclusions I draw from my analysis are that I believe there are sufficient data available to determine that

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increments have not been exceeded in the Class I areas; that there are -- that models that are currently available are not approved yet for the current application. They're close. They're in the process of being approved. And I should say in passing that I am not indicting Calpuff. I think Calpuff is the best model around. I use it myself. I think it is probably the most superior model we have available today. I'm just saying that I don't think it's good enough to make the kinds of comparison that EPA is trying to make with it. I don't think it has the skill. As good as it is, I don't think it has the skill needed to make the kinds of comparisons. It is not as yet approved for this application. It is close. It is proposed, but it has not yet been approved, and it basically lacks the skills to make the kind of determination that EPA has made here.

That concludes my talk. I would be happy to answer any questions that you might have.

MR. SCHWINDT: It was my understanding that the modeling that EPA was doing, they don't even subtract similar days, they simply take the emissions that are increment-consuming and model those and if those exceed 5, you know, that was the

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basis of their determination.

MR. WINGES: Good question. I'm glad you asked that. I was hoping somebody would ask me that. This wasn't a plant, folks.

It's a misnomer to think they have model baseline sources. Let me say it a different way. If this was a PSD application for a single source, let's say this is one source and it had emissions in the baseline period that were less and now they wanted to increase some higher emissions than the baseline, there it is perfectly appropriate to model the difference, to take the difference between your baseline emission rate and your proposed emission rate, take that delta and just model that, forget what's below that, and that's totally appropriate. That's done all the time. I would encourage that. That, by the way, will give you identical mathematical results to the way I'm suggesting you calculate the increment. In that scenario EPA's method and my method merge and they work just fine.

The problem enters when you have two things; one is multiple sources, and the second thing is when you have baseline sources that existed on the baseline date, but have now been shut down and are no longer there. It is not true that EPA

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didn't model the baseline. EPA would like to have you believe that, perhaps, but that is not the case. EPA put sources in there -- the way EPA did the modeling is, they modeled what they call increment-expanding sources in one run and then they modeled increment-consuming sources in another run. In that increment-expanding run -- let me finish that thought before I go on -- they made two runs; one with all the increment-consumers, one with all the increment-expanders and then they ran a thing called Calsum, which subtracts, in which they subtracted hour by hour the concentration from the increment expanders from the ones that were increment consumers. Does that make sense?

MR. SCHWINDT: Mm-hmm.

MR. WINGES: They took consumers, expanders, and they took concentrations hour by hour and they subtracted these. They subtracted these guys from those guys to get a difference. Okay. Hour by hour. In order to get these, they had to model sources that were present in the baseline at their baseline location, at their baseline emission rate. They had to calculate a concentration for that source at every hour for the entire five-year database. They did model the baseline. They

modeled it with 1990 through 1994 meteorological data, but they modeled those baseline sources hour by hour, point by point, in the emissions inventory for every one of those ones that were expanding, whether the source is existing sources that had a reduction in emissions or whether they were sources that were in the baseline and are gone now and are no longer present. They modeled every one of those and they subtracted them out. So it's not true that they only modeled the difference.

That difference concept only works when you have a single source and you can say I've got current emissions today and emissions yesterday.

MR. SCHWINDT: Okay. Are there any other questions?

MR. WITHAM: Yeah, I have a couple followup, a couple questions, Mr. Winges. Lyle Witham, for the court reporter.

It's pretty clear when you look at the legislative history of the law, that Congress in terms of establishing the baseline concentration for 3-hour, 24-hour annual meant for there to be -- by the first source that made an application that source would be a year of -- doing a year of monitoring and that year of monitoring would then



give you some monitoring data by which you could establish a baseline concentration. Now, the Department has this dilemma, however, because we had some monitors out there in the field, but the data isn't any good.

If we're going to go with the monitored approach to determining whether there's compliance with -- whether there's air quality deterioration and we don't have data back to that time, how do you suggest we do that?

MR. WINGES: That's a good question. Obviously, it would be a whole lot easier and better for all of us if we had air quality data back in 1976 and '77, your baseline period. That would be great, would be ideal. But the data are not sufficient quality to be used, so we don't. But if you look at the 20-year history that we do have, a couple things become apparent. You have oil and gas sources operating in the park. I think Mr. Long alluded in his testimony that they're probably responsible for a large chunk of the increment -- or not increment -- the largest chunk of the impact, the SO2 impact that occurred back in the early 1980s. They were operating back in the '70s, too. They had some impact back then. We don't know



exactly what the numbers were. We know there was some impact.

I think as you look at the park now and you look at the air quality you have in the last 10 years or so at the park, you're pretty near the bottom. I mean, you could take that monitor, those monitors, and move them out to anyplace else that I can think of in the United States and you wouldn't get lower concentrations. You would get concentrations that look kind of like what you've got now, pretty much about as low as you can get. Maybe if you put it up on the North Slope of Alaska you might be able to do better. As I think someone said the other day, in modeling they've never been able to use a number that low for a baseline concentration. The concentrations you have out there are lower than people allow us to use for background concentrations for PSD background concentrations for the national environment.

So part of my conclusion is that I don't think that you get anything lower than what you've got now. I think no matter how far back, if you were to go back and have monitors back then, I don't think they would have read anything lower than you've got now. I think you can conclude from the



basis of the air quality data and the measured data, that there's basically not much of a trend towards lower numbers. I don't think that you could have data that is a whole lot lower than what you've got.

MR. WITHAM: This is a -- figure 6 from a document submitted into the docket by the Department yesterday. It's page 22. It's a review of the historical application of prevention of significant deterioration in North Dakota, and it basically graphs all monitored emissions at each source -- I mean, at each monitoring site over the whole history of the program. And I don't know -- I'd rather you explain. Do you understand this data --

MR. WINGES: Yeah, I think I do.

MR. WITHAM: -- and could you explain it to the hearing officer?

MR. WINGES: I do think I understand the data.

MR. WITHAM: Would you explain this data to the hearing officer and basically -- my basic question after you explain it is, let's assume we go with a monitored approach rather than the modeling approach in terms of making a SIP review to determine whether the program -- whether there's actually any air quality deterioration that needs to